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Preparing Sandia for a Pandemic Flu

John Cummings jccummi@sandia.gov

The possibility of avian influenza becoming easily communicable between humans has raised concerns about the potential for a worldwide outbreak of a virulent flu strain that might cause millions of deaths in the United States. Pandemics occur in varying severities averaging four episodes per century. The most recent Hong Kong flu of 1968-1969 killed approximately 28,000 Americans. The Spanish influenza of 1918-1919 was the most deadly 20th-century pandemic, killing some 500,000 Americans and 21 million people worldwide. The emerging avian flu virus, technically the H5N1 variant, comes with many unknowns. It could remain primarily in the bird population, or it could combine with a common flu virus and begin to transmit among people. Mutations might render it more or less efficient (virulent) or more or less deadly (pathogenic). World-wide precautions might blunt its spread. Global air travel might enhance its spread. We cannot accurately determine the likelihood of a pandemic, but the possible consequences of this danger are too severe to ignore. If a pandemic is like the Spanish flu, we could have 180-360 million dead worldwide.

As a national security lab, Sandia must be equipped to support its customers and partners in a national crisis. The lab should be technologically ready to complement local and regional responses to an avian flu outbreak in New Mexico, California, and other host communities.

The Advanced Concepts Group sponsored a lab-wide brainstorm on Sandia preparations and plans for pandemic flu. Sandia Medical Director Dr. Larry Clevenger started the brainstorm with an overview of pandemic influenza, its potential impacts, and Sandia's planning efforts (which are in the initial stages). The brainstorm dialogue covered many topics: communications for the workforce, isolation and quarantine on-site, dealing with large absenteeism (at Sandia and for community/national infrastructure systems), determining who is critical for mission and support, providing for extensive work from home, and thinking about general business continuity.

THE FLU THREAT REMAINS UNDER DEBATE. Some say it's a looming disaster; others that it's overblown hype. That it remains a contagious virus with a remarkable ability to propagate among and across fowl, posing difficulties for a large number of countries, is certain. The real concern is whether human-to-human transmission will begin to occur routinely. We currently do not know if we will have time to fully prepare for a pandemic flu outbreak. We could have as little time as days or weeks. The CDC is projecting that 2-3 waves will propagate globally and the virus will evolve. Historically, the pathogenicity of viruses tends to go down as they move into human populations, but that is another element of uncertainty.

IS THE U.S. PREPARED? Worldwide there is a lot of monitoring, and that's good news. The U.S. has a preparedness plan. State and city plans are being developed. Antiviral drugs such as Tamiflu are available in limited quantities, but it is not known if the drugs will work. There are many technological issues regarding the creation of a vaccine, but even if we can develop one, will it be possible to manufacture and deliver the vaccine in time? The tone of discourse around planning is changing: in a post-Katrina world, we should be prepared to respond "on our own" – we cannot necessarily count on much (if any) government assistance.

WHAT IS SANDIA DOING? Our pandemic influenza response plan has two goals: (1) to protect our people, and (2) to manage our mission. We do not want to close the labs. What tools can be put in place to ensure this? We must address conduct of operations, health services and other community resources, protection of the workforce, as well as command and control during a crisis. Lab risk management also involves monitoring international travel for guests hosted by Sandia as well as Sandians visiting other locations.

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WE MAY NEED NEW CONDUCT OF OPERATIONS PLANS, expanded infrastructure, expanded emergency operations models, coordination, and linkages with community resources, etc. To the degree that Sandia is impacted, we can assume that Albuquerque, NM and Livermore, CA will also be impacted. Sandia needs to prepare because we have a national security mission. The local community will expect Sandia to help. Mutual aid agreements with surrounding communities are important.

TELECOMMUTING? Are we prepared for lots of Sandians to work from home? We can't telecommute the entire laboratory, but with current capabilities, we can partition telecommuting. We might isolate people who don't have the flu (e.g. If you're well and not mission critical, stay home.) Many people in the U.S. will be telecommuting, so lots of our communication and internet infrastructure could be overloaded and service degraded. Each Sandian should come up with a personal/family plan – including the possibility of working from home. Supplies that are needed at home should be obtained in advance of a flu outbreak.

PREPARING THE NM COMMUNITY. Kirtland AFB would likely make a lot of the decisions for us. What happens if they close the base? The Sandia team will be meeting with Kirtland to discuss how we would access the base in case of a closure, but we need to make sure that system is operating properly well before the flu begins to spread among humans.

WHAT ABOUT THE CA SITE? California is different because people commute from 5 different counties, each with its own public health officers, so there's a different solution set and a different puzzle to solve. The county where the lab is located has the same population as the entire state of NM.

PUBLIC RESPONSIBILITY AS SANDIANS. We are learning about the "facts" of what could happen, but that may be countermanded by talking heads on TV news, movies on bird flu, and friends and neighbors who go into bunker mentality. We've got to keep people reminded that it's just FLU – there are practical steps to take. We need to be a fountain of accurate information. Can we leverage our position as "experts" to counter "bad" information that will inevitably be circulating? How can we best use our systems engineering and analysis perspectives? Can we use our modeling and simulation capabilities to understand how the disease might spread and what mitigation measures might be effective at slowing or stopping it? Can we develop countermeasures to help detect the disease, decontaminate surfaces, or rapidly manufacture effective drugs and vaccines?

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WE ARE DEVELOPING A PLAN. Sandia is preparing for this potential healthcare crisis. We are working with others at national, state, and local levels to coordinate and integrate plans. We have some supplies of antiviral drugs. We are considering upgrades to our telecommuting capabilities. We have activated a number of employee communication channels. If a worldwide outbreak of a virulent form of flu occurs we will be prepared to respond and recover.

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